PATENT
Attorney Docket No. **FORS-06679**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Raymond F. Cracauer		
Serial No.:	10/054,023	Group No.:	1743
Filed:	11/13/2001	Examiner:	D.K. Handy
Entitled:	**Nucleic Acid Synthesizers**		

APPELLANTS' BRIEF
APPEAL NO.:

CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 C.F.R. § 1.8(a)(1)(i)(B)

I hereby certify that this correspondence (along with any referred to as being attached or enclosed) is, on the date shown below, being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: Mary Ellen Waite

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Madam/Sir:

This Brief is in furtherance of the Notice of Appeal mailed August 14, 2006, and received in the OIPE mailroom August 16, 2006.

The fees required under SS 1.17(h) and any required Petition for Extension of time for filing this Brief and fees therefore are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This Brief is transmitted in triplicate. [37 CFR § 1.192(a).]

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This Brief contains these items under the following headings and in the order set forth below [37 CFR § 1.192(c)]:

I. REAL PARTY IN INTEREST

The real party in interest is the Assignee, Third Wave Technologies, Madison, WI.

II. RELATED APPEALS AND INTERFERENCES

There exist no appeals or interferences related to the pending appeal.

III. STATUS OF CLAIMS

Claims 1-23 were filed in the original application. During prosecution of the application, Claim 24 was added and Claims 2-4, 7-19, 21, and 23 were canceled in the Amendment and Response to Office Action filed April 19, 2004. Claims 25-30 were added in the Amendment and Response to Office Action filed December 14, 2004. Claims 25-30 were withdrawn from consideration in the Office Action mailed September 27, 2005. Therefore, Claims 1, 5-6, 20, 22, and 24 are pending in this appeal.

Appellants appeal the Final Office Action of April 18, 2006.

The Claims, as they now stand, are set forth in Section VIII. CLAIMS APPENDIX.

IV. STATUS OF AMENDMENTS

All previous amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to nucleic acid synthesizers and methods of using and modifying nucleic acid synthesizers. For example, the present invention provides highly efficient, reliable, and safe synthesizers that find use, for example, in high throughput and automated nucleic acid synthesis, as well as methods of modifying pre-existing synthesizers to improve efficiency, reliability, and safety. The present invention also relates to synthesizer arrays for efficient, safe, and automated processes for the production of large quantities of oligonucleotides.

With the completion of the Human Genome Project and the increasing volume of genetic sequence information available, genomics research and subsequent drug design efforts have been increasing as well. Many diagnostic assays and therapeutic methods utilize oligonucleotides. The information obtained from genomic analysis provides valuable insight into the causes and mechanisms of a large variety of diseases and conditions, while oligonucleotides can be used to alter gene expression in cells and tissues to prevent or attenuate diseases or alter physiology. As more nucleic acid sequences continue to be identified, the need for larger quantities of oligonucleotides used in assays and therapeutic methods increases.

To meet the increasing demand for nucleic acid synthesis, there has been an increase in the variety of designs, and the volume of production of nucleic acid synthesizers. Unfortunately, the currently available synthesizers are not designed to adequately meet the needs of the industry. Exemplary nucleic acid synthesizers include the synthesizers described in U.S. Patent Publication No. 2001/0001035 A1, published on May 10, 2001. Yet, this type of synthesizer has a significant number of drawbacks. In particular, this and other available synthesizers are limited in their ability to efficiently synthesize large numbers of oligonucleotides. While synthesizers have been developed to simultaneously synthesize more than one oligonucleotide at a time, such machines are not efficient at the production of different types of nucleic acids simultaneously (e.g., different lengths of nucleic acids) and are unacceptably prone to performance failures and environmental contamination. Furthermore, available synthesizers are not suitably configured for use in large-scale nucleic acid production facilities or for automated nucleic acid synthesis.

The present invention stands in stark contrast to currently available and previously used nucleic acid synthesis systems. Specifically, the present invention provides nucleic acid synthesizers that are safe, efficient, flexible, and that are amenable to large-scale production and automation.

In one embodiment of the present invention, an oligonucleotide synthesizer is described[1] comprising a reaction chamber[2] and a lid enclosure[3], the lid enclosure containing a ventilation

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[1] For example, in the Specification at page 28, line 28 through page 56, line 24; and page 89 line 14 through page 97, line 11.

[2] Described, for example, in the Specification at page 24 line 5 through page 28 line 11; page 49, lines 26-29; and page 51, lines 15-20.

[3] Described, for example, in the Specification at page 13, lines 12-20 and 26-31; page 27, lines 20-26; page 50, lines 14-21 and 26-31; page 51, lines 1-7, 11-14, 18-20, and 21-31; page 52, lines 1-16; page 54, lines 27-31; and page 96, lines 6-14.

system[4], wherein in an open position[5], the lid enclosure provides a substantially ventilated workspace[6] via the ventilation system in the lid enclosure, wherein in the open position the ventilated workspace is of sufficient size to permit an operator's hands to enter the reaction chamber.

In another embodiment of the present invention, a ventilated nucleic acid synthesizer system[7] is described, comprising a ventilation tube[8], a lid enclosure[9] on a nucleic acid synthesizer comprising a top cover[10] with a ventilation slot[11], and a top enclosure[12] comprising a top plate[13] with a ventilation opening[14], wherein the top enclosure is attached to the top cover to form a substantially enclosed space[15] over the top cover, and a vacuum source[16] connected to the ventilation tube.

In an additional embodiment of the present invention, a method for decreasing the quantity of vapor emissions released into the surrounding atmosphere created during the use of an oligonucleotide synthesizer is described, the method comprising providing an oligonucleotide synthesizer[17], connecting the oligonucleotide synthesizer to a ventilation system[18] connected to a

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[4] Described, for example, in the Specification at page 5, lines 28-30; page 22, lines 2-6; page 48, lines 25-30; page 49, lines 19-30; page 50, lines 1-2; page 53, line 7 through page 56, line 24; and page 25, lines 16-26.
[5] Described, for example, in the Specification at page 19, lines 8-18 and 21-31; page 20, lines 1-12; page 49, lines 26-30; page 50, lines 1-2; and page 56, lines 5-24.
[6] Described, for example, in the Specification at page 28, lines 3-11; page 49, lines 28-30; page 50, lines 1-2; page 53 line 7 through page 55, line 24; page 96, lines 30-31; and page 97, lines 1-11.
[7] Described, for example, in the Specification at page 28, line 28 through page 56, line 24; and page 89 line 14 through page 97, line 11.
[8] Described, for example, in the Specification at page 47, lines 30-31; page 48, lines 2-12; page 50, lines 18-25; page 52, line 25 through page 53, line 6; page 55, lines 11-29; page 91, line 30 through page 92, line 10; and page 95, lines 7-15.
[9] Described, for example, in the Specification at page 27, lines 20-26; page 50, lines 14-21; page 50, line 26 through page 52, line 23; and page 96, lines 6-22.
[10] Described, for example, in the Specification at page 27, lines 12-26; page 34, lines 10-18; page 39, lines 23-26; page 50, lines 3-21; page 51, lines 25-30; page 52, lines 10-23; and page 54, lines 17-26.
[11] Described, for example, in the Specification at page 51, lines 15-25; page 55, lines 13-23 and 30-31; page 56, lines 1-4; and page 96, lines 11-16.
[12] Described, for example, in the Specification at page 27, lines 12-26; page 50, lines 3-21; and page 51, lines 15-20.
[13] Described, for example, in the Specification at page 34, lines 27-30; page 35, lines 1-6; and page 89, lines 22-25.
[14] Described, for example, in the Specification at page 50, lines 3-9, 18-23, and 26-31; page 51, lines 1-14; page 52, lines 3-9; and page 96; lines 20-29.
[15] Described, for example, in the Specification at page 27, lines 12-19 and 27-31; page 28, lines 1-1; page 50, lines 3-13; page 51, lines 8-20; page 55, lines 13-23; and page 94, lines 17-20.
[16] Described, for example, in the Specification at page 38, lines 10-12 and 30-31; and page 39, lines 1-6 and 23-26.
[17] Described, for example, in the Specification at page 28, line 28 through page 56, line 24; and page 89 line 14 through page 97, line 11.
[18] Described, for example, in the Specification at page 5, lines 28-30; page 22, lines 2-6; page 48, lines 25-30; page 49, lines 19-30; page 50, lines 1-2; page 53, line 7 through page 56, line 24; and page 25, lines 16-26.

source of negative pressure or vacuum[19], and operating the source of negative pressure or vacuum.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

There are three grounds of rejection to be reviewed in the present appeal:

Ground of rejection 1 – Whether Claim 1 is anticipated by Levin et al. (U.S. Pat. No. 6,432,365);

Ground of rejection 2 – Whether Claims 5 and 6 are unpatentable over Levin et al. (U.S. Pat. No. 6,432,365); and

Ground of rejection 3 – Whether Claims 20, 22, and 24 are unpatentable over McGowan et al. (U.S. Pat. No. 6,328,627) in view of Heyneker et al. (U.S. Pat. No. 6,264,981).

VII. ARGUMENT

A. Ground of Rejection 1 - Claim 1 Is Not Anticipated by Levin et al. (U.S. Pat. No. 6,432,365).

1. Levin et al. (U.S. Pat. No. 6,432,365) Does Not Teach or Possess Each and Every Element of Claim 1.

In the Final Office Action of April 18, 2006 the Examiner argues:

"Claim 1 was previously rejected under 35 U.S.C. § 102(e) as being anticipated by Levin et al. (6,432,365). This rejection was made in the Office Action mailed 7/14/2004 and remains in effect."[20]

The Federal Circuit has stated the applicable standard for anticipation as follows: "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim."[21]

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[19] Described, for example, in the Specification at page 38, lines 10-12 and 30-31; page 39, lines 1-6 and 23-26; page 52, lines 26-31; page 53, lines 11-15; page 96, lines 30-31; and page 97, lines 1-4.
[20] Final Office Action mailed April 18, 2006, page 2.
[21] See Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984).

Appellants contend that the Examiner's rejection under 35 U.S.C. § 102(e) is in clear, reversible error because Levin et al. fails to teach each element as arranged in Claim 1. Specifically, Levin et al. fails to teach:

> Claim 1 - "An oligonucleotide synthesizer comprising a reaction chamber and a lid enclosure, said lid enclosure containing a ventilation system, wherein in an open position, said lid enclosure provides a substantially ventilated workspace via said ventilation system in said lid enclosure, wherein in said open position said ventilated workspace is of sufficient size to permit an operator's hands to enter said reaction chamber." (Emphasis added).

In the rejection of July 14, 2004, the Examiner does not allege that Levin et al. teach or disclose all elements as arranged in the claims. Rather, the Examiner merely states that "The system is best shown in Figures 1, 2, and 4 and described in column 12" and then lists several components of the Levin et al. system.[22] The Examiner has specifically failed to claim, or to cite evidence showing, that Levin et al. discloses all of the elements as arranged in Claim 1.

Applicants contend that the Examiner's anticipation rejection is unsupportable because Levin et al. does not teach or disclose a synthesizer comprising a reaction chamber and a lid enclosure, wherein the lid enclosure contains a ventilation system that provides a substantially ventilated workspace via the ventilation system in the lid enclosure. Instead, the system of Levin et al. is necessarily configured with a ventilation system that is separate and distinct from the chamber lid (also referred to as the "software controlled access door **116**"[23], and "hinged lid assembly **116**"[24]). In particular, this is the case because the

> "Centrifuge chamber **112** must be sufficiently sealed so that it is capable of maintaining a vacuum and resistant to the harsh chemicals used during processing of the samples. Chamber lid **116** provides access to the interior of chamber **112** for loading and unloading of the sample and collection containers."[25]

The chamber lid of Levin et al. necessarily lacks a ventilation port because "the chamber **112** must be sufficiently sealed so that it is capable of maintaining a vacuum." Levin et al. does not teach, disclose or suggest placing a ventilation system in the chamber lid because the

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[22] See Office Action mailed July 14, 2004, page 2.
[23] See U.S. Pat. No. 6,432,365, column 12, lines 37-40.
[24] See U.S. Pat. No. 6,432,365, column 13, lines24-54.
[25] See U.S. Pat. No. 6,432,365, column 8, lines 24-29.

combination of these elements would render inoperable the chamber sealing required for maintaining a vacuum in the Levin et al. system. Rather, instead of having a ventilation system contained in the chamber lid, Levin et al. teaches "a venting cover **208** is mounted on the top **420**, covering recessed areas **304** cover. The venting cover **208** fits closely around the access openings."[26] Alternatively, Levin et al. teach that "A vent port **147** can also be formed in the bottom **1106** for attachment to tubing for venting the chamber."[27]

Nowhere does Levin et al. teach, disclose, or suggest, either expressly or inherently, a chamber lid containing a ventilation system.

Thus, because Levin et al. does not teach a synthesizer comprising a reaction chamber and a lid enclosure wherein the lid enclosure contains a ventilation system that provides a substantially ventilated workspace via the ventilation system in the lid enclosure, Levin et al. does not disclose each and every element of the claimed invention as arranged in Claim 1.

Accordingly, Claim 1 is not anticipated by Levin et al. Applicants respectfully request that this rejection be withdrawn.

B. Ground of Rejection 2 - Claims 5 and 6 Are Patentable Over Levin et al. (U.S. Pat. No. 6,432,365)

1. Claims 5 and 6 are Not Obvious in View of Levin et al. (U.S. Pat. No. 6,432,365)

In the Final Office Action of April 18, 2006 the Examiner argues:

"Claims 5 and 6 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Levin et al. (6,432,365)...These rejections remain in effect."[28]

The Examiner's rejection is in clear, reversible error because

"To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art...If an independent claim is nonobvious

[26] See U.S. Pat. No. 6,432,365, column 12, lines 53-56.
[27] See U.S. Pat. No. 6,432,365, column 14, lines 40-42.
[28] Final Office Action mailed April 18, 2006, page 3.

under 35 U.S.C. 103, then any claim depending therefrom is nonobvious."[29]

Appellants contend that the Examiner's rejection of Claims 5 and 6 under 35 U.S.C. § 103(a) is in error because Levin et al. fail to disclose each and every element as arranged in Claim 1, and therefore Levin et al. also fail to disclose each and every element of Claims 5 or Claim 6, both of which depend from Claim 1.

Specifically, Appellants contend that Levin et al. fail to disclose a synthesizer comprising a reaction chamber and a lid enclosure wherein the lid enclosure contains a ventilation system that provides a substantially ventilated workspace via the ventilation system in the lid enclosure (Claim 1). Accordingly, Appellants further contend that Levin et al. do not disclose a system comprising a plurality of oligonucleotide synthesizers comprising reaction chambers and lid enclosures wherein the lid enclosures contain ventilation systems that provide substantially ventilated workspaces via ventilation systems in the lid enclosures as claimed in Claims 5 and 6.

Thus, because Levin et al. fail to disclose all elements of Claims 5 or Claim 6, a prima facie case of obviousness cannot be established. Applicants respectfully request that this rejection be withdrawn.

C. Ground of Rejection 3 - Claims 20, 22, and 24 Are Patentable Over McGowan et al. (U.S. Pat. No. 6,328,627) In View Of Heyneker et al. (U.S. Pat. No. 6,264,981).

1. Claims 20, 22, and 24 are Not Obvious Over McGowan et al. (U.S. Pat. No. 6,328,627) In View Of Heyneker et al. (U.S. Pat. No. 6,264,981).

In the Final Office Action of April 18, 2006 the Examiner argues:

> "Claims 20, 22, and 24 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over McGowan et al. (U.S. Pat. No. 6,328,627) in view of Heyneker et al. (U.S. Pat. No. 6,264,981). These rejections remain in effect."[30]

A summary of the Examiner's faulty allegation is as follows:

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[29] MPEP, § 2143.03, citing In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) and In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), respectively.
[30] Final Office Action mailed April 18, 2006, page 3.

> "It would have been obvious to one of ordinary skill in the art to combine the vacuum system of Heyneker et al. with the block of McGowen. One would add the vacuum system of Heyneker in order to use a vacuum to remove fluids from the system."[31]

Applicants contend that the Examiner's rejection of Claims 20, 22, and 24 under 35 U.S.C. § 103(a) is in clear, reversible error. Not only has the Examiner failed to provide a basis for combining the McGowan et al. and Heyneker et al. references as required by law[32], the Examiner has also failed to address the fact that modifying a reaction block of McGowen et al. with a vacuum system of Heynecker et al. renders the McGowen et al. reaction block incapable of performing its intended function.

a) The Examiner Provides No Basis For Combining the References.

A recent Federal Circuit case explicitly discussed the standards for establishing motivation to combine. (*See, In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002)). Specifically, the Federal Circuit held that:

> The factual inquiry whether to combine references must be thorough and searching. It must be based on **objective evidence** of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with.[33]

Furthermore, an Examiner may not simply rely on conclusory statements even for what they think might be common sense or well known in the art:

> "The 'common knowledge and common sense' on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation. This court explained in *Zurko*, 258 F.3d at 1385, 59 USPQ2d at 1697 that deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense.' The Board's findings must extend to all material facts and must be documented on record, lest the 'haze of so-called expertise' acquire insulation from accountability. 'Common knowledge and common sense,' even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority."[34]

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[31] See Office Action mailed October 27, 2003, page 6.

[32] A *prima facie* case of obviousness requires the Examiner to provide a reference(s) which (a) discloses all of the elements of the claimed invention, (b) suggests or motivates one skilled in the art to combine the claimed elements to produce the claimed combination, and (c) provides a reasonable expectation of success should the claimed combination be carried out. Failure to establish any one of these three requirements precludes a finding of a *prima facie* case of obviousness and without more entitles Applicants to allowance of the claims in issue. See *Northern Telecom Inc. v. Datapoint Corp.*, 15 USPQ2d 1321, 1323 (Fed. Cir. 1990).

[33] *See, In re Lee*, 277 F.3d 1338, 1344 (Fed. Cir. 2002); internal citations omitted; emphasis added.

[34] *Id.* at 1344-1345.

However, instead of providing an objective teaching or suggestion to combine the references, the Examiner erroneously opines:

> "It would have been obvious to one of ordinary skill in the art to combine the vacuum system of Heyneker et al. with the block of McGowan. One would add the vacuum system of Heyneker in order to use a vacuum to remove fluids from the system."[35];

The Examiner has reiterated this factually and legally unsupportable opinion in subsequent Actions [36] and in the Final Office Action mailed April 18, 2006.[37]

Applicants contend that each of the Examiner's statements referred to above is an example of conclusory reasoning based only on hindsight reconstruction of the claimed invention. This is precisely the type of rejection that the Federal Circuit has forbidden (e.g., See in *In re Lee*, supra). The Examiner has provided no "objective evidence of record" as required by the Federal Circuit. This is not surprising, since McGowan et al. and Heyneker et al. are directed to different technologies and neither reference, alone or combined, teaches or suggests each element of the claimed invention.

Furthermore, Applicants respectfully assert that the Examiner is not able to cite to specific, objective factual findings because if an attempt were made to present such objective evidence, it would be clear that McGowen et al. would not benefit from being modified by the teachings of Heyneker et al. Specifically, attempting to add a vacuum system taught by Heynecker et al. to the reaction block of McGowen et al. would render the McGowen et al. reaction block incapable of performing its intended function.

b) <u>The Proposed Modification of the Reaction Block of McGowen et al. With the Vacuum System of Heyneker et al. Renders the McGowen et al. Reaction Block Unsatisfactory For Its Intended Purpose</u>

> "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."[38]

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[35] Office Action mailed October 27, 2003, ¶ 11 (page 6, lines 8-11).
[36] See, e.g., Office Action mailed July 14, 2004, ¶ 8 (pages 5 and 6, lines 18-22 and 1-2, respectively); Office Action mailed March 10, 2005, ¶ 10 (page 6, lines 6-8 and 12-14); and Office Action mailed September 29, 2005, ¶ 9 (page 6, lines 3-5).
[37] See Final Office Action mailed April 14, 2006, pages 4-5.
[38] See MPEP 2143.01(V) citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

The McGowen et al. reaction block "for enabling reflux condensation of the mixtures"[39] functions when

> "Vapors released during reaction of the reagent solution rise to the upper end of vials **12**, are cooled by the circulating gas in internal volume **28** and condensed on the inner sidewalls of the vials. The condensate then flows back to the lower end of vials **12** due to gravity. Thus, reaction block **10** enables a reflux condensation to occur during reaction of the reagent solution."[40]

Accordingly, if one applied the vacuum system of Heyneker et al. to remove fluids from the reaction block system of McGowen et al., vapors released during reaction of the reagent solution and necessary for reflux condensation reactions would be removed from the reaction block. In other words, adding a vacuum to the reaction block of McGowen et al. would remove vapors necessary for formation of condensate that would otherwise form on the inner sidewall of the vial, thereby preventing the condensate from flowing back down to the lower end of the vial, thereby inhibiting formation and/or progression of the reflux condensation reaction.

Thus, there exists no reason why one of skill in the art would attempt to modify the reaction block of McGowen et al. with the vacuum of Heynecker et al. In fact, attempting to do so would render the McGowen et al. reaction block unsatisfactory for performing reflux condensation reactions (i.e., its intended purpose).

Accordingly, because modifying the reaction block of McGowen et al. with the vacuum of Heynecker et al. would render the reaction block so modified unsatisfactory for reflux condensation reactions, there can exist no suggestion or motivation to make the proposed modification.[41]

Therefore, Applicants contend 1) that because the Examiner failed to cite to objective evidence providing a suggestion or motivation to combine the cited references; and 2) that modifying a reaction block of McGowen et al. with a vacuum system of Heynecker et al. renders the reaction block incapable of performing its intended purpose, that the Examiner's obviousness rejection is in error because the Examiner has failed to meet the requirements for establishing a *prima facie* case of obviousness. Applicants respectfully request that this rejection be withdrawn and that the claims be passed to allowance.

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[39] See, e.g., U.S. Pat. No. 6,238,627, Abstract.
[40] See U.S. Pat. No. 6,238,627, Column 5, Lines 28-35.
[41] See *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

VIII. CLAIMS APPENDIX

1. (previously presented). An oligonucleotide synthesizer comprising a reaction chamber and a lid enclosure, said lid enclosure containing a ventilation system, wherein in an open position, said lid enclosure provides a substantially ventilated workspace via said ventilation system in said lid enclosure, wherein in said open position said ventilated workspace is of sufficient size to permit an operator's hands to enter said reaction chamber.

2 – 4 (canceled).

5. (original). A system comprising a plurality of oligonucleotide synthesizers of Claim 1.

6. (original). The system of Claim 5, wherein said system comprises 100 or more of said synthesizers.

7 – 19 (canceled).

20. (previously presented). A ventilated nucleic acid synthesizer system comprising;

a) a ventilation tube,

b) a lid enclosure on a nucleic acid synthesizer comprising; a) a top cover with a ventilation slot, and b) a top enclosure comprising a top plate with a ventilation opening, wherein said top enclosure is attached to said top cover to form a substantially enclosed space over said top cover, and

c) a vacuum source connected to said ventilation tube.

21. (canceled).

22. (original). The system of claim 20, wherein said vacuum source comprises a centralized vacuum system.

23. (canceled).

24. (original). The oligonucleotide synthesizer of Claim 1, wherein said reaction chamber comprises a cartridge configured to hold a plurality of nucleic acid synthesis columns.

25. (previously presented). A method for decreasing the quantity of vapor emissions released into the surrounding atmosphere created during the use of an oligonucleotide synthesizer, said method comprising;

a) providing an oligonucleotide synthesizer of Claim 1
b) connecting said oligonucleotide synthesizer to a ventilation system connected to a source of negative pressure or vacuum
c) operating said source of negative pressure or vacuum.

26. (previously presented). A method according to Claim 25, said method comprising connecting a plurality of oligonucleotide synthesizers via said ventilation system to a centralized source of negative pressure or vacuum.

27. (previously presented). A method according to Claim 25, said method comprising the additional step;

d) wherein said operating said source of negative pressure or vacuum is sufficient to decrease the quantity of vapor emission created during the use of an oligonucleotide synthesizer.

28. (previously presented). A method according to Claim 25, said method comprising said operating said source of negative pressure or vacuum constantly during the use of said oligonucleotide synthesizer, and during loading and unloading of reagents and products from said oligonucleotide synthesizer.

29. (previously presented). A method according to Claim 25, said method comprising said operating said source of negative pressure or vacuum only when said lid enclosure comprising a ventilation system is in said open position.

30. (previously presented). A method according to Claim 29, wherein said operating of said source of negative pressure of vacuum is triggered to occur automatically whenever said lid enclosure is placed in said open position.

IX. EVIDENCE APPENDIX

There exists no evidence of record submitted pursuant to §§1.130, 1.131, or 1.132 of 37 C.F.R. or of any other evidence entered by the Examiner and relied upon by Appellants in the Appeal.

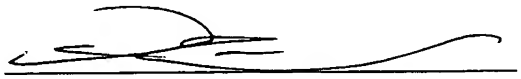
X. RELATED PROCEEDINGS APPENDIX

No decisions have been rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) C.F.R. §41.37.

XI. CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejection of Claims 1, 5-6, 20, 22, and 24 was erroneous. Reversal of the rejection is respectfully requested. Appellants request that the Board render a decision as to the allowability of the Claims.

Dated: 11/16/06



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